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TEACHER	

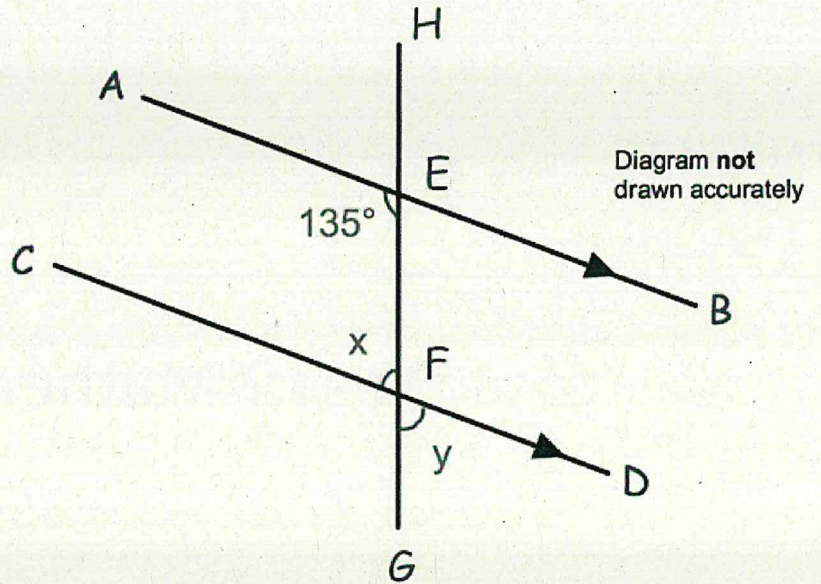
Year 9 Mathematics
End of Year Assessment 2025

Paper 2
CALCULATOR

60 minutes
57 marks

Show all your working next to the question

- 1 In the diagram
AB is parallel to CD.



- (a)(i) Work out the size of the angle marked x.

$$180 - 135 = 45^\circ$$

Answer: 45 ^{AI}°

- (ii) Give a reason for your answer:

..... co-interior angles

(or other correct reasons) ^{BI}

- (b)(i) Write down the value of y

Answer: 45 ^{AI}°
(if acute)

- (ii) Give a reason for your answer:

..... vertically opposite

(or other correct reasons) ^{BI}

(4 marks)

- 2 Convert these numbers to standard form:

- (a) 237000

Answer: 2.37×10^5 ^{AI}

- (b) 48.7×10^6

Answer: 4.87×10^7 ^{AI}

(2 marks)

3 Convert the recurring decimal $0.3\dot{2}$ to a simplified fraction

$$\begin{array}{r}
 x = 0.32222\ldots \quad \text{BI} \\
 100x = 32.22222\ldots \\
 - 10x = 3.22222\ldots \\
 \hline
 90x = 29 \quad \text{MI oe.} \\
 x = \frac{29}{90} \quad \text{AI}
 \end{array}$$

Answer: $\frac{29}{90}$

(4 marks)

4
(a) Fiona leaves £1600 in the bank for ^{five} four years.
It earns compound interest of 4% each year.

Calculate the total amount Fiona has in the bank at the end of the ^{five} four years.
Round your answer to the nearest pound.

$$\begin{aligned}
 1600 \times 1.04^5 &= 1946.644\ldots \\
 &= 1947 \quad \text{AI}
 \end{aligned}$$

MI → carried out 4% inc once
2nd MI → fully correct method.

Answer: £ 1947

(b) In a sale the price of a sofa is reduced by 28%. The sale price is £360.
Work out the price before the sale.

$$\begin{aligned}
 100 - 28 &= 72 \quad \text{BI} \\
 72\% &= £360 \\
 100\% &= £500 \quad \left. \begin{array}{l} \\ \end{array} \right\} \times \frac{100}{72} \quad \text{MI oe.}
 \end{aligned}$$

Answer: £ 500

(6 marks)

5 Sara drives for 2 hours 15 minutes at an average speed of 36 mph. How far does she drive?

→ 2.25 h.

$$D = S \times T = 36 \times 2.25 = 81$$

MI
AI

$\begin{array}{c} \triangle \\ \hline D \\ \hline S \quad T \end{array}$

clearly attempted
S x T or
2.25 seen.

Answer: 81 miles

(2 marks)

6 Find an estimate for this calculation (show your method):

$$\frac{589.6}{2.9 + 7.01}$$

$$\approx \frac{600}{3+7} = \frac{600}{10} = 60$$

MI
AI

Answer: 60

(2 marks)

7 Isaac and Victoria share money in the ratio 2:5

Victoria receives £6.60

Work out the difference between how much money Isaac and Victoria receive.

$$I : V$$

$$2 : 5$$

$$: £6.60$$

$$\text{diff} = 5 - 2 = 3 \text{ parts}$$

eg

parts	£
5	6.60
3	3.96

→ MI

↙ $\times \frac{3}{5}$ MI

AI

Answer: £ 3.96

(3 marks)

8 Simplify the ratio: $3.25 \times 10^{-3} : 4.2 \times 10^{-2}$

$$\begin{array}{l} \times 10^3 \quad 3.25 : 42 \\ \times 100 \quad 325 : 4200 \quad \text{M1} \quad \text{or.} \\ \div 25 \quad 13 : 168 \quad \text{A1} \end{array}$$

Answer: 13 : 168

(2 marks)

9 The length of a rectangle is 20 cm and the width of the rectangle is 6 cm.
Both measurements are correct to the nearest centimetre.

(a) Write down the minimum possible **width** of the rectangle.

A1

Answer: 5.5 cm

(b) Write the error interval for the area of the rectangle, A:

$$\left. \begin{array}{l} 19.5 \leq L < 20.5 \\ 5.5 \leq W < 6.5 \end{array} \right\} \text{BI either (or later)}$$
$$19.5 \times 5.5 \leq A < 20.5 \times 6.5 \quad \text{M1 (area calc. seen)}$$

A1

Answer: $107.25 \leq A < 133.25$

(4 marks)

10 Convert 65mph to metres per second

You may use the fact that 1 mile \approx 1.6 km

Round your answer to 1 decimal place.

$$\begin{aligned}
 & 65 \text{ mph} \\
 & = 104 \text{ km/h} \quad \left. \begin{array}{l} \swarrow \times 1.6 \text{ ml} \\ \searrow \times 1000 \end{array} \right\} \\
 & = 104000 \text{ m/h} \\
 & = 1733.333 \dots \text{ m/min} \quad \left. \begin{array}{l} \left. \begin{array}{l} \swarrow \text{ml for } \div 60 \text{ or } \div 60^2 \end{array} \right\} \right\} \\
 & = 28.888 \dots \text{ m/s} \\
 & = 28.9 \text{ m/s (1dp)}.
 \end{aligned}$$

Answer: 28.9 m/s A1

(3 marks)

11 The table shows information about netballers in a squad.

mp.	Age, y years	Frequency	mp x f.
18	$16 < y \leq 20$	6	108
22	$20 < y \leq 24$	10	220
26	$24 < y \leq 28$	11	286
32	$28 < y \leq 36$	17	544
↑	Total	<u>44</u>	<u>1158</u>

B1. For midpoints (allow 1 error)

Work out an estimate for the mean age in the squad.

Round your answer to 1 decimal place.

$$\text{mean} = \frac{1158}{44} = 26.318 \dots = 26.3 \text{ (1dp)}.$$

A1

ml
(dp ml)
method

Answer: 26.3

(4 marks)

12

- (a) A train starts from rest and accelerates at
- 0.2m/s^2
- for one minute.

Use the formula $v = u + at$ to calculate the velocity of the train after one minute.

$$\begin{aligned}
 v &= 0 + 0.2 \times 60 \\
 &= 12
 \end{aligned}$$

Answer: 12 m/s

- (b) Given that $v = 20\text{m/s}$, $a = 7\text{ m/s}^2$ and $s = 26\text{m}$, use the formula $v^2 = u^2 + 2as$ to find the value of u . Give the correct units.

$$\begin{aligned}
 20^2 &= u^2 + 2 \times 7 \times 26 && \text{m1} \\
 400 &= u^2 + 364 \\
 u^2 &= 36 && \text{m1} \\
 u &= 6 \text{ m/s}
 \end{aligned}$$

Answer: 6 m/s
 AI
 with units.
 (5 marks)

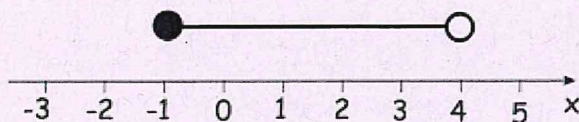
13

- (a) Solve the inequality
- $3(x - 4) \leq 16$

$$\begin{aligned}
 3x - 12 &\leq 16 && \text{m1} \\
 3x &\leq 28 \\
 x &\leq \frac{28}{3} && \text{A1}
 \end{aligned}$$

Answer: $x \leq \frac{28}{3}$

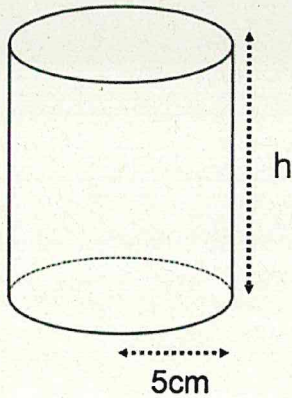
- (b) Write down the inequality shown by the diagram:



Answer: $-1 \leq x < 4$

(3 marks)

- 14 The surface area of the cylinder is $170\pi \text{ cm}^2$
Calculate the height of the cylinder



* at least curved s. area
or ends correct.

$$2\pi r^2 + 2\pi r h = 170\pi$$

$$2\pi \times 5^2 + 2\pi \times 5h = 170\pi$$

M1 *
M1 equate to 170π

$$50\pi + 10\pi h = 170\pi$$

$$(\div \pi) \quad 50 + 10h = 170 \quad \text{M1 } (\div \pi)$$

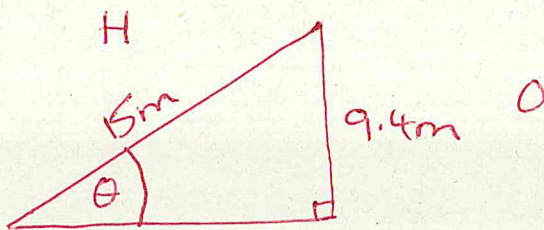
$$10h = 120$$

$$h = 12 \quad \text{A1}$$

Answer: 12 cm

(4 marks)

- 15 The 15m arm of a crane is horizontal before it lifts its load from the ground to a point 9.4m vertically above the ground. What is the angle of elevation through which the load has been lifted? Give your answer to 1 decimal place.



S⁰H

B1 correctly labelled diagram

$$\sin \theta = \frac{9.4}{15} (= 0.6266\ldots) \quad \text{M1}$$

$$\theta = \sin^{-1} \left(\frac{9.4}{15} \right) = 38.80\ldots$$

$$= 38.8^\circ \text{ (1dp)}$$

↑
M1

A1

Answer: 38.8 °

(4 marks)



- 16 60% of the people in a town are males.

20% of the males are left-handed.
 21.6% of all the people are left-handed.

Work out the percentage of the people who are not male who are left-handed.

	M	not M	
L	$0.2 \times 60 = 12\%$ (AI)	9.6%	21.6% ← BI
R	48%	30.4%	78.4%
	60%	40%	100%

BI

$$\frac{9.6}{40} = 0.24 = 24\%$$

AI

ml ft.

Answer: 24 %
(5 marks)

END OF TEST

